

Remarks

Reconsideration of this Application is respectfully requested.

Claims 1, 2, 6, 8, 9, 13, 15, 17, and 18 are sought to be amended. Claims 1-18 are pending in the application, with claims 1, 8, and 15 being the independent claims. No new matter has been entered based on these amendments.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103(a)

Claims 1-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,953,388 to Barada (“Barada”) in view of U.S. Patent No. 4,604,892 to Carraras (“Carraras”), or in the alternative, in view of U.S. Patent No. 3,948,082 to Zumbach (“Zumbach”). Applicant traverses these rejections.

Claims 1, 8, and 15 recite at least a two-probe pressure differential measuring system to measure distance using an elongated probe.

Barada teaches a differential air gauge sensor, but lacks any teaching of using an elongated probe.

Zumbach teaches a thickness measuring device coupled to a differential air gauge sensor (See Fig. 7). It appears the teaching of an elongated probe (Fig. 4) is only directed to thickness measuring using inductance measuring with coils. Thus, it appears the elongated probe is unrelated to any distance measuring done using the differential air gauge, which measures a distance only to determine where to position the thickness measuring device.

Carraras teaches of a single probe used to measure volume or thickness of an object on a substrate, where an end of the probe is elongated to conform to the shape of the object on the substrate being measured. The thickness of a material deposited on a substrate is measured by determining a difference between first and second measurements taken at different times, i.e., before and after deposit of a material on substrate.

Zumbach and Carraras are directed to thickness measuring and measure the thickness using different techniques. Carraras may use a type of pressure measuring, but uses a single probe and determines thickness of a deposited material by determining a difference between first and second measurements taken at two different time periods. Zumbach does not use a differential pressure sensor to measure distance with an alleged elongated probe, while it instead teaches the alleged elongated probe measuring thickness of an object through use of inductance.

Therefore, neither reference makes up for the deficiencies in Barada.

Further, neither Zumbach nor Carraras attempt to solve the same problem as the pending claims. The pending claims, for example, overcome a sensitivity concern with some differential pressure measuring systems. This problem is described in the instant specification as follows:

FIG. 6 shows an end view and characteristics of a circular gas gauge proximity sensor 600. One issue with proximity sensor 600 is that the sensitivity footprint, depending on the nozzle size and standoff, is often a torus like shape. Based on the torus shape, sensor 600 can have a region 602 of lesser sensitivity (see area 606 on graph 608) right under the orifice 604. This can be because side restriction regions 603 have a separation S. Sensed area 603 can be a "scanned" footprint based on several successive readings. Ideally, it is desirable to eliminate this lower sensitivity region 602 in the central portion of air gauge 600.

One way to achieve this is to provide a dramatically smaller orifice, but this can result in a smaller sensing area and less standoff. Additionally, when used as a scanning device, the topography passing near the center of the device is not considered as important as the topography passing near the upper or lower shell. Additionally, it is often desirable to compare topography results between sensor types (optical, capacitive etc). The unusual sensitivity footprint of the standard air gauge complicates this process.

In an exemplary embodiment of the instant application sensitivity is increased by:

Using the elongated nozzle having the long and thin orifice substantially eliminates any low sensitivity

areas found in conventional sensors (see FIG. 6, elements 602 and 606) partially because side restriction regions overlap (see FIG. 4, elements 356 and 360).

However, neither of the alleged elongated probes in Zumbach and Carraras is being used to solve the above stated problem. In contrast, Carraras states:

The jets shown at 5, 6 and 7 according to their shapes allow, because they are homothetic with respect to the shapes of the resistances while remaining inscribed therewithin, all the variations of thickness of the deposit to be integrated for the flow of the air currents is directly related to the flow resistance per unit of length. Thus the jet 5 will have a square section if deposit 2 has a square section, but a circular section in this case also gives good results if the circle is inscribed within the square formed by the resistance. Jets 6 and 7 each have rectangular section, for the shape of resistances 3 and 4 are rectangular.

Zumbach fails to state what problem is solved through its probe 18'. Therefore, neither Zumbach nor Carraras is used to solve the problem presented by the instant application. Thus, neither reference makes up for the deficiencies in Barada.

Because of at least these reasons stated above, none of the applied patents teach or suggest either single or in an allegedly obvious combination at least a two-probe pressure differential measuring system to measure distance using an elongated probe. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite

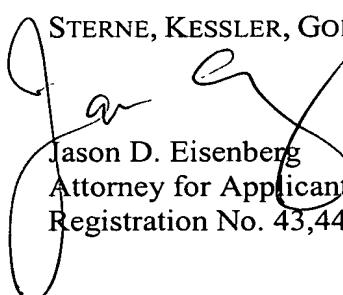
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prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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